

2048 game in Java

Generated by Doxygen 1.9.8

1 Hierarchical Index	1
1.1 Class Hierarchy	1
2 Class Index	3
2.1 Class List	3
3 Class Documentation	5
3.1 main.java.Board Class Reference	5
3.1.1 Detailed Description	6
3.1.2 Constructor & Destructor Documentation	6
3.1.2.1 Board()	6
3.1.3 Member Function Documentation	6
3.1.3.1 getScore()	6
3.1.3.2 getSize()	6
3.1.3.3 getTileAt()	6
3.1.3.4 getTiles()	7
3.1.3.5 getWonOrLost()	7
3.1.3.6 isGameOver()	7
3.1.3.7 moveDown()	7
3.1.3.8 moveLeft()	7
3.1.3.9 moveRight()	8
3.1.3.10 moveUp()	8
3.1.3.11 remTileAt()	8
3.1.3.12 setDificultad()	8
3.1.3.13 setMode()	8
3.1.3.14 setSize()	8
3.1.3.15 setTileAt()	9
3.1.3.16 setTiles()	9
3.1.3.17 setWonOrLost()	9
3.1.3.18 show()	9
3.2 main.java.ColorScheme Class Reference	10
3.2.1 Detailed Description	10
3.2.2 Constructor & Destructor Documentation	10
3.2.2.1 ColorScheme()	10
3.2.3 Member Function Documentation	10
3.2.3.1 getTileBackground()	10
3.2.3.2 getTileColor()	11
3.2.3.3 updateColors()	11
3.3 main.java.Controls Class Reference	12
3.3.1 Detailed Description	12
3.3.2 Member Function Documentation	12
3.3.2.1 bind()	12
3.3.2.2 keyTyped()	13

3.3.2.3 unbind()	13
3.4 main.java.Game Class Reference	13
3.4.1 Detailed Description	13
3.5 main.java.Grid Class Reference	14
3.5.1 Detailed Description	14
3.5.2 Constructor & Destructor Documentation	14
3.5.2.1 Grid()	14
3.5.3 Member Function Documentation	15
3.5.3.1 paintComponent()	15
3.6 main.java.Leaderboard Class Reference	15
3.6.1 Detailed Description	15
3.6.2 Member Function Documentation	15
3.6.2.1 addPlayer()	15
3.6.2.2 loadLeaderboard()	16
3.6.2.3 printLeaderboard()	16
3.6.2.4 saveLeaderboard()	16
3.6.2.5 sortPlayers()	16
3.7 main.java.Main Class Reference	16
3.7.1 Detailed Description	17
3.8 main.java.Menu Class Reference	17
3.8.1 Detailed Description	17
3.8.2 Constructor & Destructor Documentation	18
3.8.2.1 Menu()	18
3.9 main.java.Player Class Reference	18
3.9.1 Detailed Description	18
3.9.2 Constructor & Destructor Documentation	18
3.9.2.1 Player()	18
3.9.3 Member Function Documentation	18
3.9.3.1 getName()	18
3.9.3.2 getScore()	19
3.10 main.java.RoundButton Class Reference	19
3.10.1 Detailed Description	20
3.10.2 Constructor & Destructor Documentation	20
3.10.2.1 RoundButton()	20
3.10.3 Member Function Documentation	20
3.10.3.1 paintBorder()	20
3.10.3.2 paintComponent()	20
3.11 main.java.Tile Class Reference	21
3.11.1 Detailed Description	21
3.11.2 Constructor & Destructor Documentation	21
3.11.2.1 Tile() [1/3]	21
3.11.2.2 Tile() [2/3]	21

3.11.2.3 Tile() [3/3]	21
3.11.3 Member Function Documentation	22
3.11.3.1 getValue()	22
3.11.3.2 hasMoved()	22
3.11.3.3 isEmpty()	22
3.11.3.4 merging()	22
3.11.3.5 setPosition()	23
3.11.3.6 setValue()	23
3.11.3.7 toString()	23
3.12 main.java.Window Class Reference	24
3.12.1 Detailed Description	24
3.12.2 Constructor & Destructor Documentation	24
3.12.2.1 Window()	24
3.12.3 Member Function Documentation	25
3.12.3.1 getHeight()	25
3.12.3.2 getWidth()	25
Index	27

Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

main.java.Board	5
main.java.ColorScheme	10
main.java.Game	13
JButton	
main.java.RoundButton	19
JFrame	
main.java.Menu	17
main.java.Window	24
JPanel	
main.java.Grid	14
KeyListener	
main.java.Controls	12
main.java.Leaderboard	15
main.java.Main	16
main.java.Player	18
main.java.Tile	21

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

main.java.Board	5
main.java.ColorScheme	10
main.java.Controls	12
main.java.Game	13
main.java.Grid	14
main.java.Leaderboard	15
main.java.Main	16
main.java.Menu	17
main.java.Player	18
main.java.RoundButton	19
main.java.Tile	21
main.java.Window	24

Chapter 3

Class Documentation

3.1 main.java.Board Class Reference

Public Member Functions

- **Board** (int size)
- int **getSize** ()
- void **setSize** (int size)
- void **setMode** (boolean mode)
- List< List< **Tile** > > **getTiles** ()
- void **setTiles** (List< List< **Tile** > > tiles)
- **Tile** **getTileAt** (int row, int col)
- void **setTileAt** (int row, int col, **Tile** t)
- void **remTileAt** (int row, int col)
- void **moveUp** ()
- void **moveDown** ()
- void **moveLeft** ()
- void **moveRight** ()
- void **isGameOver** ()
- String **getWonOrLost** ()
- void **setWonOrLost** (String wonOrLost)

Static Public Member Functions

- static void **setDificultad** (int dificultad)
- static void **setModo** (int modo)
- static int **getScore** ()

Protected Member Functions

- void **show** ()

3.1.1 Detailed Description

Board

Author

petrnemecek

3.1.2 Constructor & Destructor Documentation

3.1.2.1 Board()

```
main.java.Board.Board (
    int size ) [inline]
```

Constructor

Parameters

<i>size</i>	of the grid
-------------	-------------

3.1.3 Member Function Documentation

3.1.3.1 getScore()

```
static int main.java.Board.getScore ( ) [inline], [static]
```

Returns game score

Returns

game score

3.1.3.2 getSize()

```
int main.java.Board.getSize ( ) [inline]
```

Returns size of the grid

Returns

size of the grid

3.1.3.3 getTileAt()

```
Tile main.java.Board.getTileAt (
    int row,
    int col ) [inline]
```

Returns a **Tile** (p. ??) at given position

Parameters

<i>row</i>	
<i>col</i>	

Returns

Tile (p. ??) at given position

3.1.3.4 getTiles()

```
List< List< Tile > > main.java.Board.getTiles ( ) [inline]
```

Returns a list of lists of **Tile** (p. ??)

Returns

a list of lists of **Tile** (p. ??)

3.1.3.5 getWonOrLost()

```
String main.java.Board.getWonOrLost ( ) [inline]
```

Returns game status

Returns

game status

3.1.3.6 isGameOver()

```
void main.java.Board.isGameOver ( ) [inline]
```

Checks if the game is over

3.1.3.7 moveDown()

```
void main.java.Board.moveDown ( ) [inline]
```

Moves tiles down

3.1.3.8 moveLeft()

```
void main.java.Board.moveLeft ( ) [inline]
```

Moves tiles left

3.1.3.9 moveRight()

```
void main.java.Board.moveRight ( ) [inline]
```

Moves tiles right

3.1.3.10 moveUp()

```
void main.java.Board.moveUp ( ) [inline]
```

Moves tiles up

3.1.3.11 remTileAt()

```
void main.java.Board.remTileAt (
    int row,
    int col ) [inline]
```

Remove a **Tile** (p. ??) at given position

Parameters

<i>row</i>	
<i>col</i>	

3.1.3.12 setDificultad()

```
static void main.java.Board.setDificultad (
    int dificultad ) [inline], [static]
```

Setters

3.1.3.13 setMode()

```
void main.java.Board.setMode (
    boolean mode ) [inline]
```

Set game mode

Returns

game mode

3.1.3.14 setSize()

```
void main.java.Board.setSize (
    int size ) [inline]
```

Set size of the grid

Parameters

<i>size</i>	of the grid
-------------	-------------

3.1.3.15 setTileAt()

```
void main.java.Board.setTileAt (
    int row,
    int col,
    Tile t ) [inline]
```

Set a **Tile** (p. ??) at given position

Parameters

<i>row</i>	
<i>col</i>	
<i>t</i>	Tile (p. ??) to be set

3.1.3.16 setTiles()

```
void main.java.Board.setTiles (
    List< List< Tile > > tiles ) [inline]
```

Set a list of lists of **Tile** (p. ??)

Parameters

<i>tiles</i>	a list of lists of Tile (p. ??)
--------------	----------------------------------------

3.1.3.17 setWonOrLost()

```
void main.java.Board.setWonOrLost (
    String wonOrLost ) [inline]
```

Set game status

Parameters

<i>wonOrLost</i>	game status
------------------	-------------

3.1.3.18 show()

```
void main.java.Board.show ( ) [inline], [protected]
```

Shows the board

The documentation for this class was generated from the following file:

- src/main/java/Board.java

3.2 main.java.ColorScheme Class Reference

Public Member Functions

- **ColorScheme** ()
- Color **getTileBackground** (int value)
- Color **getTileColor** (int value)
- void **updateColors** ()

Static Public Attributes

- static final Color **WINBG** = new Color(0XF8F8EF)
- static final Color **GRIDBG** = new Color(0XBBADA0)
- static final Color **BRIGHT** = new Color(0X776E65)
- static final Color **LIGHT** = new Color(0XF9F6F2)
- static final Color **DARK_WINBG** = new Color(0x3B3939)
- static final Color **DARK_GRIDBG** = new Color(0x595353)
- static final Color **DARK_BRIGHT** = new Color(0x526679)
- static final Color **DARK_LIGHT** = new Color(0x706F6F)

3.2.1 Detailed Description

Class ColorScheme that handles the colors of the game

3.2.2 Constructor & Destructor Documentation

3.2.2.1 ColorScheme()

```
main.java.ColorScheme.ColorScheme ( ) [inline]
```

Set the colors of the game

3.2.3 Member Function Documentation

3.2.3.1 getTileBackground()

```
Color main.java.ColorScheme.getTileBackground (
    int value ) [inline]
```

Returns the background color of the tile

Parameters

<i>value</i>	value of the tile
--------------	-------------------

Returns

background color of the tile

3.2.3.2 getTileColor()

```
Color main.java.ColorScheme.getTileColor (
    int value ) [inline]
```

Returns the color of the tile

Parameters

<i>value</i>	value of the tile
--------------	-------------------

Returns

color of the tile

3.2.3.3 updateColors()

```
void main.java.ColorScheme.updateColors ( ) [inline]
```

Returns the color of the text

Parameters

<i>value</i>	value of the tile
--------------	-------------------

Returns

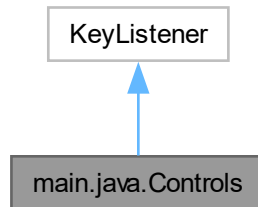
color of the text

The documentation for this class was generated from the following file:

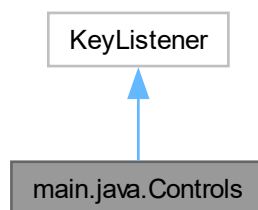
- src/main/java/ColorScheme.java

3.3 main.java.Controls Class Reference

Inheritance diagram for main.java.Controls:



Collaboration diagram for main.java.Controls:



Public Member Functions

- void **keyTyped** (KeyEvent e)
- void **keyReleased** (KeyEvent e)
- void **keyPressed** (KeyEvent e)
- void **bind** ()
- void **unbind** ()

3.3.1 Detailed Description

Class that handles the keyboard input

3.3.2 Member Function Documentation

3.3.2.1 bind()

```
void main.java.Controls.bind ( ) [inline]
```

Binds the keyboard input to the game

3.3.2.2 keyTyped()

```
void main.java.Controls.keyTyped (
    KeyEvent e ) [inline]
```

Empty constructor

3.3.2.3 unbind()

```
void main.java.Controls.unbind ( ) [inline]
```

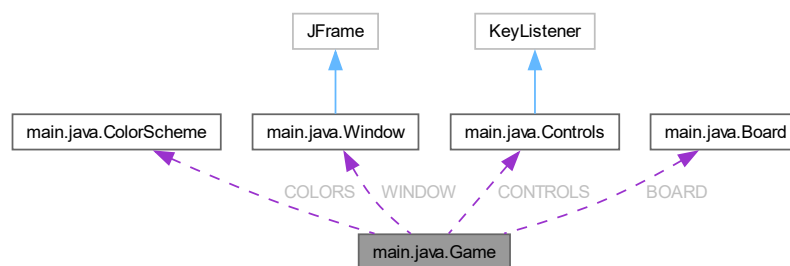
Unbinds the keyboard input from the game

The documentation for this class was generated from the following file:

- src/main/java/Controls.java

3.4 main.java.Game Class Reference

Collaboration diagram for main.java.Game:



Static Public Attributes

- static boolean **isDarkMode**
- static **ColorScheme COLORS** = new **ColorScheme**()
- static final **Window WINDOW** = new **Window**("2048")
- static final **Controls CONTROLS** = new **Controls**()
- static final **Board BOARD** = new **Board**(4)

3.4.1 Detailed Description

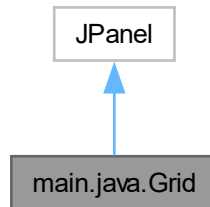
Class that handles the game

The documentation for this class was generated from the following file:

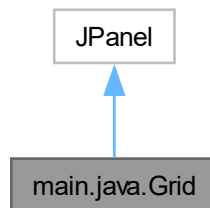
- src/main/java/Game.java

3.5 main.java.Grid Class Reference

Inheritance diagram for main.java.Grid:



Collaboration diagram for main.java.Grid:



Public Member Functions

- `Grid ()`
- `void paintComponent (Graphics g2)`

3.5.1 Detailed Description

Class Grid that handles the grid of the game

3.5.2 Constructor & Destructor Documentation

3.5.2.1 Grid()

```
main.java.Grid.Grid ( ) [inline]
```

Constructor of the class Grid

3.5.3 Member Function Documentation

3.5.3.1 paintComponent()

```
void main.java.Grid.paintComponent (
    Graphics g2 ) [inline]
```

Paints the grid

Parameters

<i>g2</i>	graphics
-----------	----------

The documentation for this class was generated from the following file:

- src/main/java/Grid.java

3.6 main.java.Leaderboard Class Reference

Static Public Member Functions

- static List< **Player** > **loadLeaderboard** ()
- static void **saveLeaderboard** (List< **Player** > players)
- static void **addPlayer** (**Player** player)
- static void **sortPlayers** ()
- static void **printLeaderboard** (List< **Player** > players)

3.6.1 Detailed Description

Leaderboard

3.6.2 Member Function Documentation

3.6.2.1 addPlayer()

```
static void main.java.Leaderboard.addPlayer (
    Player player ) [inline], [static]
```

Add a player to the leaderboard

Parameters

<i>player</i>	Player to add
---------------	---------------

3.6.2.2 loadLeaderboard()

```
static List< Player > main.java.Leaderboard.loadLeaderboard ( ) [inline], [static]
```

Load the leaderboard from the file

Returns

List of players

3.6.2.3 printLeaderboard()

```
static void main.java.Leaderboard.printLeaderboard (
    List< Player > players ) [inline], [static]
```

Print the leaderboard

Parameters

<i>players</i>	List of players
----------------	-----------------

3.6.2.4 saveLeaderboard()

```
static void main.java.Leaderboard.saveLeaderboard (
    List< Player > players ) [inline], [static]
```

Save the leaderboard to the file

Parameters

<i>players</i>	List of players
----------------	-----------------

3.6.2.5 sortPlayers()

```
static void main.java.Leaderboard.sortPlayers ( ) [inline], [static]
```

Sort the players by score

The documentation for this class was generated from the following file:

- src/main/java/Leaderboard.java

3.7 main.java.Main Class Reference

Static Public Member Functions

- static void **main** (String[] args)

3.7.1 Detailed Description

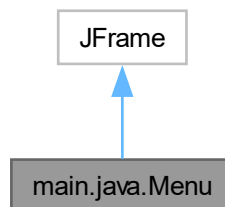
Initializes the game

The documentation for this class was generated from the following file:

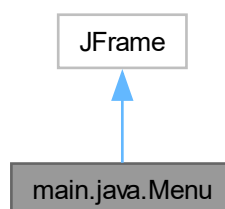
- src/main/java/Main.java

3.8 main.java.Menu Class Reference

Inheritance diagram for main.java.Menu:



Collaboration diagram for main.java.Menu:



Public Member Functions

- `Menu ()`

3.8.1 Detailed Description

Class Menu that handles the menu of the game

3.8.2 Constructor & Destructor Documentation

3.8.2.1 Menu()

```
main.java.Menu.Menu ( ) [inline]
```

Constructor of the class Menu

The documentation for this class was generated from the following file:

- src/main/java/Menu.java

3.9 main.java.Player Class Reference

Public Member Functions

- **Player** (String name, int score)
- String **getName** ()
- int **getScore** ()

3.9.1 Detailed Description

Class Player that handles the player

3.9.2 Constructor & Destructor Documentation

3.9.2.1 Player()

```
main.java.Player.Player (
    String name,
    int score ) [inline]
```

Constructor of the class Player

Parameters

<i>name</i>	Name of the player
<i>score</i>	Score of the player

3.9.3 Member Function Documentation

3.9.3.1 getName()

```
String main.java.Player.getName ( ) [inline]
```

Get the name of the player

Returns

Name of the player

3.9.3.2 getScore()

```
int main.java.Player.getScore ( ) [inline]
```

Get the score of the player

Returns

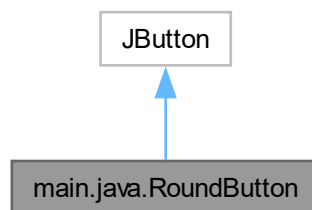
Score of the player

The documentation for this class was generated from the following file:

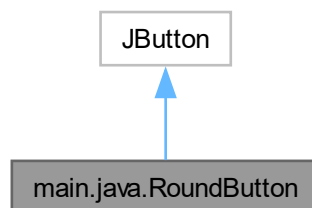
- src/main/java/Player.java

3.10 main.java.RoundButton Class Reference

Inheritance diagram for main.java.RoundButton:



Collaboration diagram for main.java.RoundButton:



Public Member Functions

- **RoundButton** (String text, Color backgroundColor, Color foregroundColor)

Protected Member Functions

- void **paintComponent** (Graphics g)
- void **paintBorder** (Graphics g)

3.10.1 Detailed Description

Class that handles the round buttons

3.10.2 Constructor & Destructor Documentation

3.10.2.1 RoundButton()

```
main.java.RoundButton.RoundButton (
    String text,
    Color backgroundColor,
    Color foregroundColor ) [inline]
```

Constructor of the class RoundButton

Parameters

<i>text</i>	Text of the button
<i>backgroundColor</i>	Background color of the button
<i>foregroundColor</i>	Foreground color of the button

3.10.3 Member Function Documentation

3.10.3.1 paintBorder()

```
void main.java.RoundButton.paintBorder (
    Graphics g ) [inline], [protected]
```

Paints the border of the button

3.10.3.2 paintComponent()

```
void main.java.RoundButton.paintComponent (
    Graphics g ) [inline], [protected]
```

Paints the button

The documentation for this class was generated from the following file:

- src/main/java/RoundButton.java

3.11 main.java.Tile Class Reference

Public Member Functions

- **Tile** (int value)
- **Tile** (int value, int row, int col)
- **Tile** ()
- int **getValue** ()
- void **setValue** (int value)
- void **setPosition** (int row, int col)
- int **merging** ()
- boolean **hasMoved** (int row, int col)
- boolean **isEmpty** ()
- String **toString** ()

3.11.1 Detailed Description

Tile

3.11.2 Constructor & Destructor Documentation

3.11.2.1 Tile() [1/3]

```
main.java.Tile.Tile (
    int value ) [inline]
```

Constructor of the class Tile

3.11.2.2 Tile() [2/3]

```
main.java.Tile.Tile (
    int value,
    int row,
    int col ) [inline]
```

Constructor of the class Tile

3.11.2.3 Tile() [3/3]

```
main.java.Tile.Tile ( ) [inline]
```

Constructor of the class Tile

3.11.3 Member Function Documentation

3.11.3.1 `getValue()`

```
int main.java.Tile.getValue ( ) [inline]
```

Get the row of the tile

Returns

Row of the tile

3.11.3.2 `hasMoved()`

```
boolean main.java.Tile.hasMoved (
    int row,
    int col ) [inline]
```

checks whether numbered (nonzero) tile changes its position

Parameters

<i>row</i>	
<i>col</i>	

Returns

true if tile changed its position, false if not

3.11.3.3 `isEmpty()`

```
boolean main.java.Tile.isEmpty ( ) [inline]
```

checks whether tile is empty

Returns

true if tile is empty, false if not

3.11.3.4 `merging()`

```
int main.java.Tile.merging ( ) [inline]
```

Get the row of the tile

Returns

Row of the tile

3.11.3.5 setPosition()

```
void main.java.Tile.setPosition (
    int row,
    int col ) [inline]
```

Get the row of the tile

Returns

Row of the tile

3.11.3.6 setValue()

```
void main.java.Tile.setValue (
    int value ) [inline]
```

Get the row of the tile

Returns

Row of the tile

3.11.3.7 toString()

```
String main.java.Tile.toString ( ) [inline]
```

Get the row of the tile

Returns

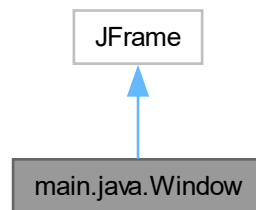
Row of the tile

The documentation for this class was generated from the following file:

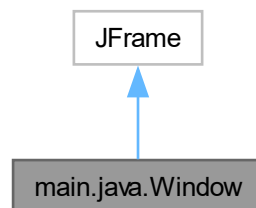
- src/main/java/Tile.java

3.12 main.java.Window Class Reference

Inheritance diagram for main.java.Window:



Collaboration diagram for main.java.Window:



Public Member Functions

- **Window** (String title)
- int **getWidth** ()
- int **getHeight** ()

3.12.1 Detailed Description

Window

Author

petrnemecek

3.12.2 Constructor & Destructor Documentation

3.12.2.1 Window()

```
main.java.Window.Window (  
    String title ) [inline]
```

Constructor of the class Window

Parameters

<i>title</i>	Title of the window
--------------	---------------------

3.12.3 Member Function Documentation

3.12.3.1 getHeight()

```
int main.java.Window.getHeight ( ) [inline]
```

Get the height of the window

Returns

Height of the window

3.12.3.2 getWidth()

```
int main.java.Window.getWidth ( ) [inline]
```

Get the width of the window

Returns

Width of the window

The documentation for this class was generated from the following file:

- src/main/java/Window.java

Index

- addPlayer
 - main.java.Leaderboard, 15
- bind
 - main.java.Controls, 12
- Board
 - main.java.Board, 6
- ColorScheme
 - main.java.ColorScheme, 10
- getHeight
 - main.java.Window, 25
- getName
 - main.java.Player, 18
- getScore
 - main.java.Board, 6
 - main.java.Player, 19
- getSize
 - main.java.Board, 6
- getTileAt
 - main.java.Board, 6
- getTileBackground
 - main.java.ColorScheme, 10
- getTileColor
 - main.java.ColorScheme, 11
- getTiles
 - main.java.Board, 7
- getValue
 - main.java.Tile, 22
- getWidth
 - main.java.Window, 25
- getWonOrLost
 - main.java.Board, 7
- Grid
 - main.java.Grid, 14
- hasMoved
 - main.java.Tile, 22
- isEmpty
 - main.java.Tile, 22
- isGameOver
 - main.java.Board, 7
- keyTyped
 - main.java.Controls, 12
- loadLeaderboard
 - main.java.Leaderboard, 15
- main.java.Board, 5
 - Board, 6
 - getScore, 6
 - getSize, 6
 - getTileAt, 6
 - getTiles, 7
 - getWonOrLost, 7
 - isGameOver, 7
 - moveDown, 7
 - moveLeft, 7
 - moveRight, 7
 - moveUp, 8
 - remTileAt, 8
 - setDificultad, 8
 - setMode, 8
 - setSize, 8
 - setTileAt, 9
 - setTiles, 9
 - setWonOrLost, 9
 - show, 9
- main.java.ColorScheme, 10
 - ColorScheme, 10
 - getTileBackground, 10
 - getTileColor, 11
 - updateColors, 11
- main.java.Controls, 12
 - bind, 12
 - keyTyped, 12
 - unbind, 13
- main.java.Game, 13
- main.java.Grid, 14
 - Grid, 14
 - paintComponent, 15
- main.java.Leaderboard, 15
 - addPlayer, 15
 - loadLeaderboard, 15
 - printLeaderboard, 16
 - saveLeaderboard, 16
 - sortPlayers, 16
- main.java.Main, 16
- main.java.Menu, 17
 - Menu, 18
- main.java.Player, 18
 - getName, 18
 - getScore, 19
 - Player, 18
- main.java.RoundButton, 19
 - paintBorder, 20
 - paintComponent, 20

- RoundButton, 20
- main.java.Tile, 21
 - getValue, 22
 - hasMoved, 22
 - isEmpty, 22
 - merging, 22
 - setPosition, 22
 - setValue, 23
 - Tile, 21
 - toString, 23
- main.java.Window, 24
 - getHeight, 25
 - getWidth, 25
 - Window, 24
- Menu
 - main.java.Menu, 18
- merging
 - main.java.Tile, 22
- moveDown
 - main.java.Board, 7
- moveLeft
 - main.java.Board, 7
- moveRight
 - main.java.Board, 7
- moveUp
 - main.java.Board, 8
- paintBorder
 - main.java.RoundButton, 20
- paintComponent
 - main.java.Grid, 15
 - main.java.RoundButton, 20
- Player
 - main.java.Player, 18
- printLeaderboard
 - main.java.Leaderboard, 16
- remTileAt
 - main.java.Board, 8
- RoundButton
 - main.java.RoundButton, 20
- saveLeaderboard
 - main.java.Leaderboard, 16
- setDificultad
 - main.java.Board, 8
- setMode
 - main.java.Board, 8
- setPosition
 - main.java.Tile, 22
- setSize
 - main.java.Board, 8
- setTileAt
 - main.java.Board, 9
- setTiles
 - main.java.Board, 9
- setValue
 - main.java.Tile, 23
- setWonOrLost
 - main.java.Board, 9
- show
 - main.java.Board, 9
- sortPlayers
 - main.java.Leaderboard, 16
- Tile
 - main.java.Tile, 21
- toString
 - main.java.Tile, 23
- unbind
 - main.java.Controls, 13
- updateColors
 - main.java.ColorScheme, 11
- Window
 - main.java.Window, 24